REMARKS

The Office Action dated May 13, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 73-104 are currently pending in the present application, including independent claims 73, 83, 93, 97, and 101. Specifically, Applicants here cancelled claims 20-37 and 39-72 without prejudice or disclaimer, and added new claims 73-104 to more particularly point out and distinctly claim the subject matter of the present application. Entry of the new claims is respectfully submitted because these new claims add no new subject matter and serve only to place the present application in better condition for examination. It is believed that all grounds for rejection in the Office Action are currently addressed and that the present application is in condition for allowance in view of the claim additions and the following comments. Reconsideration of 73-104 is respectfully requested.

Claim Objections

The Office Action objected to claims 20-37 and 39-72 on the basis of alleged formality. Although Applicants have cancelled these claims and added new claims 73-104, Applicants respectfully urge that the new claims have been drafted to address the grounds for objection raised in the Office Action. For example, the Office Action objected to various claims reciting slightly differing definitions for the relative activity factor A and the code blocking rate B in the dependent claims. Applicants urge that

claims 73-104 present consistent definitions for these and other variables, as well as using consistent technical terminology. Furthermore, Applicants have endeavored to define the various variables recited in the claims using terminology that is consistent with the disclosure in the specification.

Applicants therefore believe that all grounds for objection have addressed in the new claims and respectfully request that the objection be withdrawn. Consideration and allowance of claims 73-104 are respectfully requested.

Claim Rejections Under 35 U.S.C §112, Second Paragraph

The Office Action further rejected claims 21, 27, 30, 32, 36, 40 ,46, 51-52, 55, 63-64, and 65 under 35 U.S.C. 112, second paragraph as allegedly failing to particularly point out and distinctly claim the subject matter that the Applicants regard as the invention.

Claims 21, 30 and 40 were rejected because the limitation of "preferably by X or a fraction there of" was indefinite. Applicants note that new claims 75, 85, 95, 99, and 103 now positively recited this limitation as "less than or equal to X." The Office Action further alleged that the limitation was illusory in that it require the power to be decreased by any portion of any number. Applicant respectfully urge that this limitation, when considered in the context of the other claim limitations [e.g., X is preset, and $P_{txDSCHest}$ is smaller than $(P_{txPDSCHallowed} - X)$], is, in fact, non-trivial to one of ordinary skill in the field of coding communications transmission.

The Office Action also rejected claims 27, 36, 46, 55, and 67 for containing the limitation of the code tree being "heavily loaded." Applicants respectfully urge that this rejection is improper because the limitation of a code tree being highly loaded, as recited in new claims 81 and 91, is qualified the present specification. Applicants note, for example, that in the present application at page 11, lines 3-4, describes that a code tree is heavily loaded when $L_{code} > TH_{code}$, where L_{code} is a current load of a code tree, and TH_{code} is a threshold parameter. Thus, Applicants urge that this limitation is therefore sufficiently definite to a persons of ordinary skill in the field of communications.

Regarding claims 32, 51-52, and 63-64, the Office Action took the position that the expression of "allowing higher bit rates" and "decreasing maximum bit rates" rendered the claim indefinite as providing a casual effect. New claims 77-78 and 87-88 positively recited these limitations to clarify that limitations are part of the claimed invention.

Applicants respectfully urge that all grounds for rejection are addressed in new claims 73-104. Accordingly, withdrawal of this basis for rejection and reconsideration of these claim are respectfully requested.

Claim Rejections Under 35 U.S.C §103(a)

Claims 20-25, 28-34, 37, 39-44, 47, and 72 are rejected as being allegedly unpatentable over U.S. Patent Publication No. 2002/0110101 (Gopalakrishnan) in view of an article entitled "Code Placement and Replacement Strategies for Wideband CDMA OVSF Code Tree Management" (Tseng) and U.S. Patent Publication No. 2003/0231586

(Chheda). Referring, for example, to claim 20, the Office Action took the position that Gopalakrishnan disclosed all limitation of this claim except that the measuring a weighted code blocking rate and that an adjusted characteristic is power, but that these deficiencies are cured, respectively, by Tseng and Chheda. However, as described in greater detail below, the combination of Gopalakrishnan, Tseng, and Chheda fails to disclose each and every limitation recited in an of the pending claims.

Independent claim 73, from which claims 74-82 depend, relates to a method comprising adaptive setting reservation of channelization codes or allowed power for a downlink shared channel, DSCH, based on parameters for a minimum allowed spreading factor or an allowed power level, and setting the parameters depending on traffic load, a total load of a cell, and availability of channelization codes. Measured quantities include an average transmitted power of a physical downlink shared channel, a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period, and a weighted code blocking rate, the weighted code blocking rate comprisaing a relative time during an observation period in which a larger bit rate than an actually allocated bit rate could have been allocated to a user equipment according to a link adaption criteria for controlling the downlink shared channel. At least one of a root spreading factor and allowed power for the downlink shared channel are adaptively adjusting based on results of the measuring.

Independent claim 83, from which claims 84-92 depend, relates to an apparatus, comprising a setter configured to adaptively set reservation of channelization codes or

allowed power for a downlink shared channel based on parameters for minimum allowed spreading factor and allowed power level, depending on traffic load, a load of a cell and availability of channelization codes. A measurer in the apparatus is configured to measure factors including average transmitted power of a physical downlink shared channel, relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period, and a weighted code blocking rate, the weighted code blocking rate representing the relative time during observation period where a larger bit rate than the actually allocated bit rate could have been allocated to a user equipment according to a link adaption criteria for controlling the downlink shared channel. Also, the setter is further configured to adjust at least one of a root spreading factor and allowed power for the downlink shared channel based on results of themeasurement.

Independent claim 93, from which claims 94-96 depend, relates to an apparatus, comprising setting means for adaptively setting reservation of channelization codes or allowed power for a downlink shared channel based on parameters for minimum allowed spreading factor or allowed power level, depending on traffic load, a load of a cell and availability of channelization codes. The apparatus further includes measuring means for measuring average transmitted power of a physical downlink shared channel, relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period, and weighted code blocking rate, the weighted code

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blocking rate comprising the relative time during observation period in which a larger bit rate than an actually allocated bit rate could have been allocated to a user equipment according to a link adaption criteria for controlling the downlink shared channel. Adjusting means in the appatratus are for adjusting a root spreading factor and allowed power for the downlink shared channel based on the measuring.

Independent claim 97, from which claims 98-100 depend, relates to an apparatus, configured to measure average transmitted power of a physical downlink shared channel, relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink shared channel during an observation period, and weighted code blocking rate, the weighted code blocking rate representing the relative time during observation period where a larger bit rate than the actually allocated bit rate could have been allocated to a user equipment according to a link adaption criteria for controlling the downlink shared channel.

Independent claim 101, from which claims 102-104 depend, relates a computer program embodied on a computer-readable medium, comprising computer-executable components for adaptive setting reservation of channelization codes or allowed power for a downlink shared channel, DSCH, based on parameters for a minimum allowed spreading factor or an allowed power level, and setting the parameters depending on traffic load, a total load of a cell, and availability of channelization codes. Quantities are measured, including an average transmitted power of a physical downlink shared channel, a relative activity factor of the physical downlink shared channel, the relative activity factor defining the ratio between silence and activity of the physical downlink

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shared channel during an observation period, and a weighted code blocking rate, the weighted code blocking rate comprisaing a relative time during an observation period in which a larger bit rate than an actually allocated bit rate could have been allocated to a user equipment according to a link adaption criteria for controlling the downlink shared channel. At least one of a root spreading factor and allowed power for the downlink shared channel are adaptively adjusting based on results of the measuring.

As described below, Gopalakrishnan, Tseng, and Chheda do neither teach nor suggest the claimed subject-matter.

Gopalakrishnan generally discloses a system providing data rate determination. Available power fraction and available Walsh codes in each active leg are dynamically changing over time. Applicants note that Gopalakrishnan generally relates to a convention technique in which the rate is adapted based on a combined resource of levels at each cell (power and code space).

As an initial note, Gopalakrishnan does not teach or suggest the limitation from claim 73 that <u>average</u> transmitted power of a physical downlink shared channel is measured. Instead, as described, for example at paragraph [0016], Gopalakrishnan discloses that **available** transmit power is mentioned. Gopalakrishnan contains no disclosure or suggestion that regarding average transmitted power.

Applicants further note that Gopalakrishnan does not teach or suggest the limitation from claim 73 of <u>measuring a relative activity factor</u>. The Office Action alleged that this limitation is disclosed in Gopalakrishnan at paragraph [0066] that merely

mentions a channel activity. However, this and other sections of Gopalakrishnan do teach or suggest measuring the relative activity factor.

In particular, as recited in claim 73, the "relative activity factor" is defined as the ratio between silence and activity of the physical downlink shared channel during an observation period. Applicants therefore urge the "relative activity factor" is a novel parameter, and the measurement of this parameter is not taught or suggested in Gopalakrishnan that does not teach or suggest a measurement of a ratio between silence and activity of a physical downlink shared channel during an observation period.

Moreover, as admitted in the Office Action, Gopalakrishnan does not contain any disclosure or suggestion of a weighted code blocking rate.

In response to this last deficiency, the Office Action cited to Tseng. However, Applicants urge that Tseng does nowhere refer to any "weighted code blocking rate" and certainly does not teach or disclose any of the other deficiencies in Gopalakrishnan described above, such as measuring average transmitted power and a relative activity factor.

Instead, Tseng discusses code placement and replacement strategies for CDMA OVSF code tree management and mentions code blocking probability, referring to blocking probability at different traffic loads and spreading factors. The blocking probability of Tseng is significantly different from the claimed weighted code blocking rate of the current claims. For example, as defined in the attached independent claims, the weighted code blocking rate is represented by the relative time during observation period where a larger bit rate than the actually allocated bit rate could have been allocated to a

user equipment according to a link adaptation criteria for controlling the downlink shared channel. Moreover, even if it could be argued that Tseng teaches or suggests measuring of such a weighted code blocking rate (Not Admitted), Applicants urge that there is also not suggestion in Tseng of using this measurement for adjusting a root spreading factor or allowed power as recited in claim 73.

The Office Action further concede that Gopalakrishnan does not contain any disclosure or suggestion that an adjusted characteristic is power, but took the position that at least this deficiency is cured by Chheda.

Chheda relates to maximizing the number of communication sessions in a telecommunications network that includes multiple protocols that each utilize a certain number of codes and a certain amount of power. Accordingly, the desirability of each protocol may vary depending on the number of codes and the amount of power available. A code usage level and a power usage level for the network are obtained and compared to determine whether the network is using a higher percentage of the available codes or a higher percentage of the available power. If a higher percentage of codes are in use, a new session may be established using a protocol that uses relatively few codes but more power. Likewise, if a higher percentage of power is in use, the new session may be established using a protocol that uses relatively little power but more codes.

Thus, Chheda relates to maximizing the number of communication sessions in a telecommunication network. Multiple protocols may be used which each may utilize a certain number of codes and a certain amount of power. Applicants therefore note that Chheda also does not teach or disclose at least the above-described deficiencies in

Gopalakrishnan related to measuring average transmitted power and a relative activity factor.

For at least these reasons, claim 73 is allowable over the combination of Gopalakrishnan, Tseng, and Chheda. Similarly, independent claims 83, 93, 97, and 101, although patentably distinct from claim 73, also recite limitations related to measuring average transmitted power and a relative activity factor and are allowable over Gopalakrishnan, Tseng, and Chheda on a similar basis. Likewise, each of dependent claims 74-82, 84-92, 94-96, 98-100, and 102-104 are allowable as depending from an allowable claim, as well as for the separate limitations recited in these claims. Accordingly, consideration and allowance of claims 73-104 are respectfully requested.

Applicants also note Gopalakrishnan, Tseng, and Chheda are directed to diverse technical problems and would not be considered for combination without undue hindsight from the present application.

Applicants further note that, in addition to specific technical arguments, any "obviousness" rejection that requires a combination of 4 or 5 prior art references is an improper mosaic. In particular, Applicants further note that the need of the Office Action to cite 3 or more references in each of the rejections may be viewed as inherently suggesting that the claimed invention is not obvious. It is well established in United States patent law that a piecemeal analysis of a number of references, to extract a number of individual elements which are picked and chosen to recreate the claimed invention, is improper absent some teaching or suggestion in the references to support their use in the particular claimed combination. It is improper to look to the Applicants' own disclosure for

any such motivation or incentive (Interconnect Planning Corp. v. Feil, 227 USPQ 543 (CAFC 1985), Symbol Technologies Inc. v. Opticon, Inc., 19 USPQ 2d 1241 (CAFC 1991), In re Rothermel and Wadell, 125 USPQ 328 (CCPA 1960), In re Jones, 21 2d 1941 (CAFC 1992)). Therefore, Applicants urge that a rejection based on a mosaic of numerous prior art references, as used in present Office Action, is improper and inherently proves that the recited invention is not obvious under 35 U.S.C. §103(a). For at least separate reasons, this rejection under 35 U.S.C. §103(a) as being allegedly unpatentable in view of Gopalakrishnan, Tseng, and Chheda is improper and should be withdrawn.

Claims 26, 35, and 45 are rejected as being allegedly unpatentable over Gopalakrishnan, Tseng, and Chheda, further in view of U.S. Patent Publication No. 2002/0089952 (Cao). For example, the Office Action alleged that base claim 20 is unpatentable over the combination of Gopalakrishnan, Tseng, and Chheda and Cao disclosed the additional limitation in dependent claim 26 of assigning codes for downlink in a code tree starting from a certain limb of a code tree, and codes are assigned for used in another limb of the code tree. However, as described in greater detail below, the combination of Gopalakrishnan, Tseng, Chheda, and Cao fails to disclose each and every limitation recited in an of the pending claims.

As described above, the combination of Gopalakrishnan, Tseng, and Chheda do not disclose every recitation of claims 73-104. Cao does not cure these deficiencies.

Cao relates to relates to packet transmission scheduling and specifically to UMTS packet transmission scheduling. It is an object of the invention to provide an improved method for packet transmission scheduling, especially on downlink shared channels and an improved packet transmission scheduling system, both the improved method and the system especially adapted to be used for UMTS systems. The invention proposes a quality of service scheduling of multiple data flows in a CDMA system, wherein a priority order of protocol data units (PDU) of multiple data flows with regard to predefined flow's quality of service requirements is determined and a serving of the protocol data units (PDU) is performed by dynamically creating is transport block sets (TBS) to be transmitted to the physical layer (PHY-layer) with regard to the defined priority order and in dependence of allocated radio resource constraints.

Thus, Cao does not make up for the above-described limitations in Gopalakrishnan, Tseng, and Chheda since Cao does not teach or suggest measuring average transmitted power and a relative activity factor. For at least these reasons, independent claims 73 and 83 are allowable over the combination of Gopalakrishnan, Tseng, Chheda, and Cao. Likewise, dependent claims 80 and 90 should therefore also be allowable over the combination of Gopalakrishnan, Tseng, Chheda, and Cao.

Claims 27, 36, and 46 are rejected as being allegedly unpatentable over Gopalakrishnan, Tseng, Chheda, and Cao, further in view of 3GPP TS 25.308 (the standard). For example, the Office Action alleged that base claim 20 is unpatentable over the combination of Gopalakrishnan, Tseng, and Chheda, and Cao disclosed the additional

limitation in dependent claim 27 that the channel is a HS-DSCH. However, as described in greater detail below, the combination of Gopalakrishnan, Tseng, Chheda, and Cao fails to disclose each and every limitation recited in an of the pending claims.

As described above, the combination of Gopalakrishnan, Tseng, and Chheda do not disclose every recitation of claims 73-104. The standard does not cure these deficiencies.

As described in this standard, High Speed Downlink Packet Access (HSDPA) is a 3G (third generation) mobile telephony communications protocol in the High-Speed Packet Access (HSPA) family, which allows networks based on Universal Mobile Telecommunications System (UMTS) to have higher data transfer speeds and capacity. As well as improving data rates, HSDPA also reduces latency and so the round trip time for applications. Along with the HS-DSCH channel, three new physical channels are also disclosed: HS-SCCH, HS-DPCCH and HS-PDSCH. The High Speed-Shared Control Channel (HS-SCCH) informs the user that data will be sent on the HS-DSCH 2 slots ahead. The Uplink High Speed-Dedicated Physical Control Channel (HS-DPCCH) carries acknowledgment information and current channel quality indicator (CQI) of the user. This value is then used by the base station to calculate how much data to send to the user devices on the next transmission. The High Speed-Physical Downlink Shared Channel (HS-PDSCH) is the channel mapped to the above HS-DSCH transport channel that carries actual user data.

Thus, the standard does not make up for the above-described limitations in Gopalakrishnan, Tseng, and Chheda since the standard does not teach or suggest measuring average transmitted power and a relative activity factor.

Furthermore, Applicants note that none of the pending claims 73-104 recites a HS-DSCH. Applicants further note that Gopalakrishnan, Tseng, Chheda, and the standard are silent regarding the limitation in claims 27, 36, and 46 (now cancelled) that the code tree is "highly loaded." As described above, the Office Action improperly alleged that this limitation was indefinite, even though it was fully defined in the specification.

For at least these reasons, each of the claims 73-104 are allowable over the combination of Gopalakrishnan, Tseng, Chheda, and the standard.

Claims 48-53, 56, 60-65 and 68 are rejected as being allegedly unpatentable over Gopalakrishnan, Tseng, and Chheda, further in view of U.S. Patent No. 5,138,311 (Weinberg). For example, regarding claim 48, the Office Action alleged that the combination of Gopalakrishnan, Tseng, and Chheda disclose all limitations of this claim with the exception of the "relative activity factor," but that this deficiency is cured by Weinberg. However, as described in greater detail below, the combination of Gopalakrishnan, Tseng, Chheda, and Weinberg fails to disclose each and every limitation recited in an of the pending claims.

As described above, the combination of Gopalakrishnan, Tseng, and Chheda do not disclose every recitation of claims 73-104. Weinberg does not cure these deficiencies.

The communication system in Weinberg includes an input (202) for requesting and receiving a first message information format and for requesting and receiving a second message information format, and controller (210) for detecting a measure of communication activity and for comparing the measure of communication activity to a threshold that is adaptable by the controller (210) as a function of the communication activity. The communication system accepts the first message information format when the measure of communication activity is below the threshold (604, 610, 606, and 608), and accepts the second message information format when the measure of communication activity is above the threshold (604, 610, 612, 614, and 616).

The Office Action specifically references Weinburg at FIGS. 4A-4B and at col. 2, lines 58-62 that discloses that "a ratio of the amount of time spent transmitting information over the communication channel versus the amount of communication channel idle time may serve to indicate a measure of communication activity." However, Applicant note that, as described above, Weinburg relates to scheduling network resources (*i.e.*, timing transmission of a message) and not to using the relative active level to adjust power. Furthermore, Weinburg does not relate to observing any of the downlink channels, as recited in certain embodiments of the present invention.

Thus, Weinberg does not make up for the above-described limitations in Gopalakrishnan, Tseng, and Chheda since Weinberg generally does not teach or suggest measuring average transmitted power and a relative activity factor of the downlink channel. For at least these reasons, claims 73-104 are allowable over the combination of Gopalakrishnan, Tseng, Chheda, and Weinberg.

Claims 54 and 66 are rejected as being allegedly unpatentable over Gopalakrishnan, Tseng, Chheda, and Weinberg, further in view of Cao. Claims 55, 57-59, 67, and 69-71 are rejected as being allegedly unpatentable over Gopalakrishnan, Tseng, Chheda, Weinberg, and Cao, further in view of 3GPP TS 25.308. As described above, each of claims 73-104 are allowable over each of Gopalakrishnan, Tseng, Chheda, Weinberg, and Cao, and 3GPP TS 25.308, either alone or in combination.
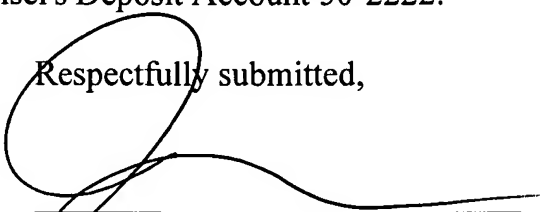
As discussed above, each of the pending claims 73-104 recites subject matter which is neither disclosed nor suggested in any of the cited references. Applicants submit that the recited subject matter is more that sufficient to render the invention non-obvious to a person of ordinary skill in the art. It is respectfully requested that claims 73-104 therefore be allowed in view of the above amendments and remarks, and that the present application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

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Enclosures: Additional Claims Transmittal
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